

REDESCRIPTION OF THE TYPE SPECIES OF
MYOPSOCUS, *M. UNDUOSUS* (HAGEN), AND
RESULTING NOMENCLATRURAL CHANGES IN GENERA
AND SPECIES OF MYOPSOCIDAE (PSOCOPTERA)*

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The assignment of species to the major genera in the Family Myopsocidae has been hampered by lack of detailed morphological information about the types of these genera. The genera involved are *Myopsocus* Hagen, *Lichenomima* Enderlein, *Phlotodes* Enderlein, and *Rhaptoneura* Enderlein.

Enderlein's (1910) genera were based entirely on wing venational characters. Some of these have later proven to be variable and of questionable value (Badonnel 1967). Roesler (1944) synonymized *Phlotodes* and *Rhaptoneura* at the generic level but maintained them as subgenera. Badonnel (1955) stated that genitalic characters justify the maintenance of *Rhaptoneura* and *Phlotodes* as genera but did not show what characters were involved. Smithers (1964) assigned all species which might fall in the genera *Myopsocus*, *Lichenomima*, *Phlotodes*, and *Rhaptoneura* to *Myopsocus* until the types could be studied. Badonnel (1967) following Enderlein (1910) and Roesler (1944) assigned to *Myopsocus* all species with Rs and M joined by a crossvein in the hindwing, thus synonymizing *Lichenomima* with *Myopsocus*, and assigned all species in which Rs and M in the hindwing are fused for a distance to *Phlotodes*, thus synonymizing *Rhaptoneura* with *Phlotodes*.

The present paper reports diagnostic features of the type of *Myopsocus unduosus* (Hagen), the type species of *Myopsocus* (Enderlein 1910). Genus *Myopsocus* is re-diagnosed on the basis of this examination, and an augmented diagnosis of *Lichenomima* is included. Generic synonymies are revised, and the species now assigned to *Myopsocus* and *Lichenomima* are listed.

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Myopsocus unduosus (Hagen)

Psocus unduosus Hagen 1859:201.

Myopsocus unduosus (Hagen) Hagen 1866:210.

Type material and its examination.—Types consist of two males, originally pointed, in the Museum of Comparative Zoology, Cambridge, Massachusetts. Each bears a type label with MCZ number 10118 and the label "Ceylon, coll. Nietner." I first examined these types in January 1970, ascertained that both are males of the same species, and selected one as lectotype. I then soaked the lectotype off the point, placed it in 80% ethanol, mounted the right wings on a slide in euparal, and cleared and figured the external genitalia. Early in 1982, I borrowed the wing slide and made figures from it.

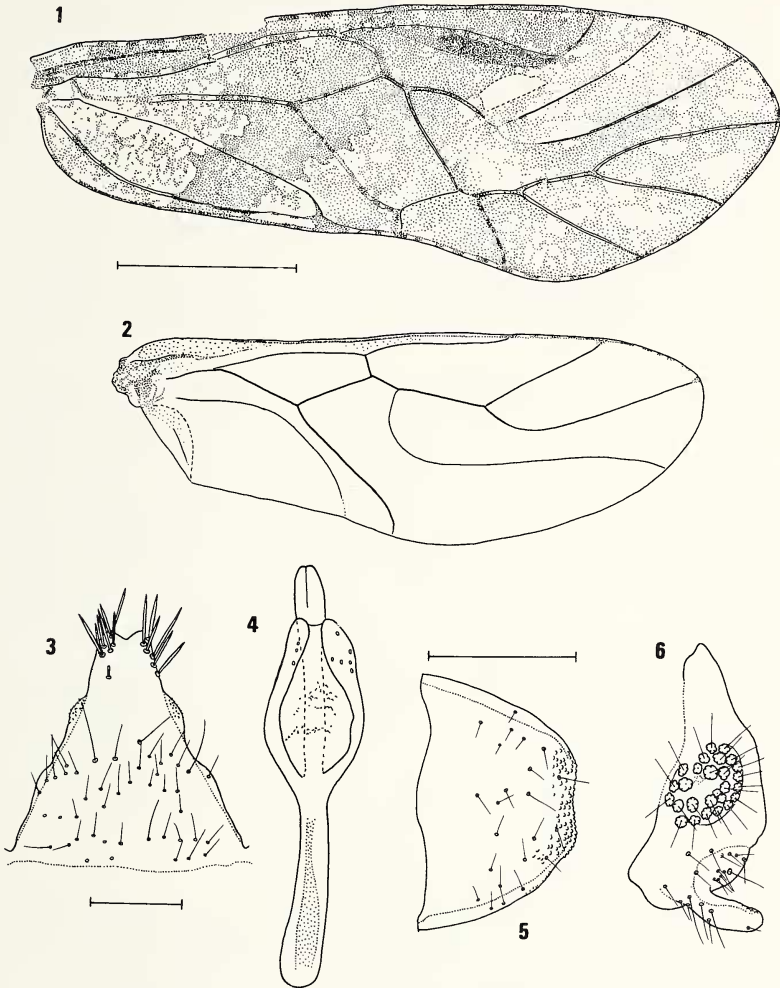
Measurements (mm).—Forewing length = 3.94; hindwing length = 3.22; posterior tibial length = 1.72; least distance between compound eyes = 0.27; transverse diameter of compound eye = 0.42.

Color characters.—Forewing (Fig. 1) with fairly distinct, mottled crossband in basal half of wing; a distinct stigmasaum darkly marked in middle; entire margin and most of veins with alternating dark and light marking. Hindwing (Fig. 2) unmarked except for brown clouding at base and along anterior margin and alternating dark and light marking along margin from distal end of R_1 to distal end of R_{4+5} . All femora dark brown with a narrow yellowish-white preapical ring.

Structural characters.—Forewing (Fig. 1) with relatively long Rs-M fusion, short M- Cu_1 fusion. Hindwing with Rs-M fusion slightly longer than segment of Rs before it. Hypandrium (Fig. 3) elongate, tapering distally, with slightly bulging, shagreened area on each side at about distal two-thirds of length; distal end on each side with field of heavy setae, each seta tapering toward end and base. Phallosome (Fig. 4) elongate, slender; median style separate from lateral arms at about two-thirds distance from base to tips of arms and extending beyond tips of arms. Epiproct (Fig. 5) semicircular except truncated distally, the distal end beset with minute tubercles. Paraproct (Fig. 6) bearing bluntly rounded distal process; sense cushion with 28 trichobothria, all with basal florets.

DIAGNOSTIC FEATURES AND SYNONYMY OF *MYOPSOCUS* HAGEN

Various authors have noted the constancy within and among species of the two character states Rs and M joined by a crossvein



Figs. 1–6. *Myopsocus unduosus* (Hagen) male lectotype. Fig. 1. Forewing; scale = 1.0 mm. Fig. 2. Hindwing; scale of Fig. 1. Fig. 3. Hypandrium; scale = 0.2 mm. Fig. 4. Phallosome (dorsal view); scale of Fig. 3. Fig. 5. Epiproct; scale = 0.2 mm. Fig. 6. Right paraproct; scale of Fig. 5.

versus fused for a distance in the hindwing of the Myopsocid genera under consideration. Enderlein (1910:68) stated about *M. unduosus*: "im Hinterflügel ist der Radialramus und die Media durch eine Querader mit einander verbunden." Obviously, the statement is not correct. Rs and M are fused for a distance in the hindwing; however, following Enderlein's erroneous statement, Roesler (1944) and Badonnel (1967) mis-assigned these two character states. Thus *Lichenomima* (Rs and M joined by a crossvein) was synonymized under *Myopsocus* and *Rhaptoneura* (Rs and M fused for a distance) was synonymized under *Phlotodes*. On the basis of examination of the type, it is evident that *Myopsocus* has as synonyms *Phlotodes* and *Rhaptoneura*. *Lichenomima* is probably tenable as a distinct genus.

Characters correlating with the fusion of Rs and M for a distance in the hindwing are the following: 1) phallosome generally with a median style (known exceptions: *M. aldabrensis* (New), *M. minor* (New and Thornton), *M. pallidus* (Smithers), *M. speciosus* (Smithers), *M. splendidus* (Badonnel)); 2) female subgenital plate terminating in a process tapered distally and with two large setae at the tip plus smaller setae in some species.

ASSIGNMENT OF SPECIES TO *MYOPSOCUS*

Given the above definition and synonymies, *Myopsocus* includes the following species, grouped according to their nomenclatural history:

1) Species originally placed in *Psocus* and subsequently transferred to *Myopsocus*:

australis Brauer 1865, Australia, Melanesia

unduosus Hagen 1859, Sri Lanka

2) Species originally assigned to *Myopsocus*, all subsequently transferred, in effect, to *Phlotodes*, or *Rhaptoneura*, or both in sequence:

chunius Thornton, Lee, & Chui 1972, Micronesia

eatoni McLachlan 1880, Europe, North Africa

furcatus Smithers 1964, Australia

griseipennis McLachlan 1866, Australia

hickmani Smithers 1964, Tasmania

incomptus Smithers 1964, Australia

**kolbei* Enderlein 1903 (type of *Phlotodes*), New Guinea

novaezealandiae Kolbe 1883, New Zealand
palauensis Thornton, Lee, & Chui 1972, Micronesia
punctatus Thornton, Lee, & Chui 1972, Micronesia

3) Species originally assigned to *Phlotodes*:

aenulus Badonnel 1967, Madagascar
aldabrensis New 1977, Aldabra
alticola Thornton 1981, Fiji
ambiguus Badonnel 1967, Madagascar
amicus Thornton 1981a, Tonga
angolensis Badonnel 1955, Angola, Madagascar
anomalus Smithers & Thornton 1979, Melanesia
antillanus Mockford 1974, Cuba, Hispaniola, Florida
ascoides Thornton 1981, Fiji
bellus Smithers & Thornton 1974, New Caledonia
bipunctatus Thornton 1981, Fiji
bomasus Smithers & Thornton 1974, New Guinea
brunneigenus Smithers & Thornton 1979, Melanesia
clarki Turner 1975, Jamaica
congolensis Badonnel 1949, Zaire
corticus Smithers 1964a, Madagascar
cubanus Mockford 1974, Cuba
dentatus Smithers & Thornton 1974, New Guinea
fenestratus Smithers & Thornton 1974, New Guinea
graptus Thornton 1981, Fiji, Tonga
gregarius Smithers & Thornton 1979, Melanesia
gressitti Smithers & Thornton 1974, New Guinea
hoskinsi Smithers & Thornton 1979, Melanesia
inocellatus Smithers & Thornton 1974, New Guinea
lichenosus Enderlein 1931, Seychelles, Madagascar
lineatus Smithers & Thornton 1979, Melanesia
lyriferus Smithers 1964a, Madagascar
maculatus Smithers & Thornton 1974, New Guinea, Melanesia
marginatus Smithers & Thornton 1974, New Guinea
megops Smithers & Thornton 1979, Melanesia
minor New & Thornton 1975, Brazil
minutus Mockford 1974, Cuba, Mexico
mjöbergi Karny 1925, Sarawak, Borneo
napuka Thornton 1981, Fiji
obscurus Badonnel 1967, Madagascar

- peltatus* Smithers & Thornton 1974, New Guinea
pennyi New 1979, Brazil
personatus Badonnel 1967, Madagascar
pilipes Smithers & Thornton 1974, New Guinea
placidulus Smithers 1975, Australia
platyvalvulus Smithers & Thornton 1979, Melanesia
preclarus Smithers & Thornton 1974, New Guinea
punctatoides Thornton 1981, Fiji, Tonga
quadrisetosus Smithers & Thornton 1974, New Caledonia
rastafari Turner 1975, Jamaica
reptus Thornton 1981, Fiji
rimosus Smithers & Thornton 1974, New Guinea
samoanus Karny 1932, Samoa
scabiosus Smithers & Thornton 1974, New Guinea
splendidus Badonnel 1967, Madagascar
thecatus New & Thornton 1975a, Malay Peninsula
toxeres Smithers & Thornton 1974, New Guinea
venustus Smithers & Thornton 1974, New Guinea
vilazi Smithers & Thornton 1974, New Caledonia
zimmermani Thornton 1981, Fiji
- 4) Species originally assigned to *Rhaptoneura*:
- africanus* Badonnel 1955, Angola
ciliiferus Smithers 1964a, Madagascar
cryptus Smithers 1957, Natal
**dispar* Enderlein 1910 (type of *Rhaptoneura*), Paraguay
magnificus Smithers 1957, South & East Africa
muscosus Enderlein 1931, Seychelles
pallidus Smithers 1964a, Madagascar
setosus Smithers 1964a, Madagascar
speciosus Smithers 1957a, Madagascar
- 5) Species *incertae sedis*, originally assigned to *Myopsocus* and best left there until they are re-examined:
- bakeri* Banks 1916, Philippines, Guam
cinereus Navás 1932, Argentina
enderleini Banks 1913, Philippines
fraternus McLachlan 1866, Assam (originally assigned to *Psocus*)
pluviosus Navás 1934, India
taurus Banks 1941, Santo Domingo

RELATIONSHIPS OF *MYOPSOCUS UNDUOSUS* (HAGEN)

Badonnel (1967) constructed a classification of the species from Madagascar, and Smithers and Thornton (1974) augmented it to include many of the Old World species. *M. unduosus*, being known only from the male, and presenting such unique male characters as the phallosome with its basal half a simple rod, and the hypandrium with two distal fields of heavy setae, does not seem to fit into any of the groups that have been proposed. Smithers and Thornton (1974) noted that numerous other species could not be placed in their classification due to paucity of information.

AUGMENTED DIAGNOSIS OF *LICHENOMIMA* ENDERLEIN

Species assigned to *Lichenomima* (assigned to *Myopsocus* by most authors since Badonnel 1967) have veins Rs and M joined by a crossvein in the hindwing. Correlated with this character are absence of a median style of the phallosome (possible exception: *L. ariasi* New) and female subgenital plate distally with a transverse sclerite, more or less separate from the main plate, and never terminating in a single process tapering posteriorly.

Species assignable to *Lichenomima* appear to be those listed by Smithers (1967) plus the following:

ampla Smithers & Thornton 1974 (from *Myopsocus*), New Guinea

ariasi New 1979 (from *Myopsocus*), Brazil

capeneri Smithers 1973 (from *Myopsocus*), South Africa

chelata Thornton & Woo 1973 (from *Myopsocus*), Galapagos Islands

clypeofasciata Mockford 1974 (from *Myopsocus*), Cuba

coloradensis Banks 1907 (from *Myopsocus*), Colorado

elongata Thornton 1960 (from *Myopsocus*), Hong Kong

machadoi Badonnel 1977 (from *Myopsocus*), Angola

medialis Thornton 1981 (from *Myopsocus*), Fiji

posterior Navás 1927 (from *Psocus*), Costa Rica

pulchella New & Thornton 1975 (from *Myopsocus*), Brazil

sanguensis New 1973 (from *Myopsocus*), Nepal

varia Navás 1927 (from *Amphigerontia*), Costa Rica

Note.—*Myopsocus medialis* Thornton (1981), assignable to *Lichenomima* on the basis of hindwing venation, appears to be so different in several other features as to merit a distinct genus.

SUMMARY

Examination of the type of *Myopsocus unduosus* (Hagen), the type species of *Myopsocus*, allows the genera *Phlotodes* Enderlein and *Rhaptoneura* Enderlein to be synonymized with *Myopsocus*. The species now assigned to *Myopsocus* are listed according to their nomenclatural history. Species assigned to *Myopsocus* by most recent authors are re-assigned to *Lichenomima* Enderlein.

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